

# Clarity

## I. Roles:

Ari Echt-Wilson: Design  
Sherman Leung: Developer/Front-End  
David Eng: Developer/Back-End  
Akaash Nanda: Project Manager

## II. Introduction and Mission Statement

The purpose of this study is to get a sense of how users interact with our earliest low-fidelity prototype of Clarity. Further, the experimental design will include a portion dedicated to getting user feedback regarding the most intuitive and confusing parts of the user experience. Our objective in conducting user testing is to solicit feedback that we can use to iterate upon our product design, progressively moving towards delivering on our mission statement below:

*Clarity seeks to close the feedback loop in the classroom by increasing transparency between students & professors. Our application empowers students to indicate shared confusion about material in class while providing professors with the tools to solicit real-time feedback on how effective their lecture is in garnering student understanding.*

## III. Prototype description, with images of each screen used by your tasks and a picture of the entire system

We have a mobile and web interface to our application. The main page and the question-asking interface of the mobile interface is detailed in Figures 3.1 and 3.2:

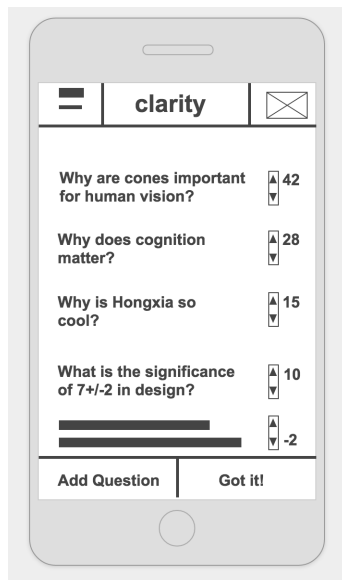


Figure 3.1 - Main feed of the mobile interface

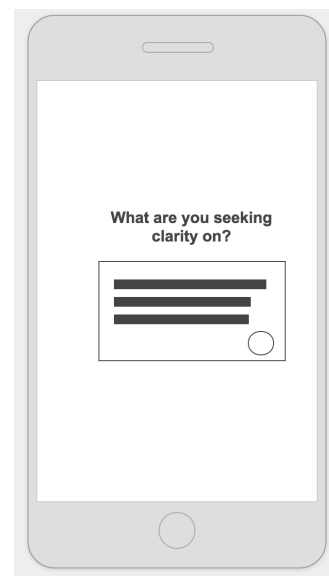


Figure 3.2 - Question input

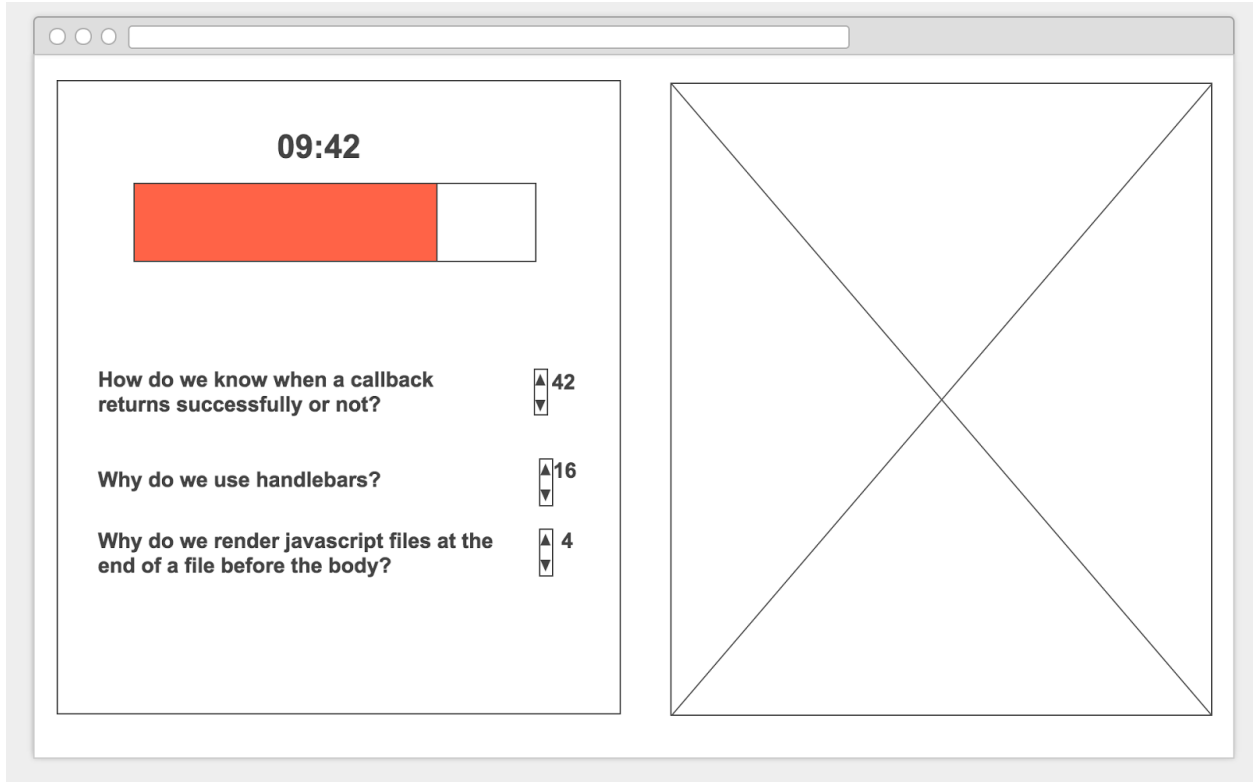


Figure 3.3 - Web interface for the instructor

## IV. Method

### 1. Participants: demographics, how recruited/compensated

#### 1. Participant #1:

Participant 1 is a sophomore at Stanford majoring in Product Design. She is a student who takes and has taken many large lecture classes, which is the environment we are looking at improving. She was compensated with chocolate caramels.

#### 2. Participant #2

Participant 2 is a senior at Stanford majoring in Science, Technology, and Society. He was compensated with chocolate caramel.

#### 3. Participant #3

Participant 4 is a junior majoring in Computer Science (HCI). As a former student of CS147, she was familiar with the concepts of prototyping and very open to give feedback and her comments on user experience. She was compensated with chocolate caramels.

#### 4. Participant #4

Participant 4 is a course instructor at Stanford teaching CS42: Contemporary Javascript. As a course instructor and a coterminous CS student, he has plenty of experience of using and experiencing technology on both sides of the student and instructor interaction. He was compensated with coffee at Starbucks.

## **2. Environment**

We reserved the Crothers Hall Multimedia lounge for our testing. Although this is not a classroom environment, it is a quiet room that allowed us to simulate a classroom environment for students using the low fidelity prototype.

We had our participants watch five minutes of the CS 147 lecture, taught by James Landay, on human abilities from October 14th. As they watched the video, they were instructed to use our application. We simply asked them to “use the app when you have questions and to show your level of understanding when the professor moves on.”

### *For Instructor Inquiry*

We approached the instructor after lecture and asked him to give a mock lesson using the application and interact with it as he would in a live lecture while still in the classroom. As he taught the material from the slides, he was told to make use of the information in the application on his screen. We simulated the experience by placing the computer on a table and having the instructor interact with the application when moving to the next topic.

## **3. Tasks**

Akaash: Greeter / Observer

Ari: Facilitator

David: Observer

Sherman: Computer

## **4. Procedure**

When each participant arrived, Akaash greeted the participant and had them read over the consent form and sign it. Akaash explained that we are building a mobile application for student and professor use during lecture in order to close the student-feedback loop. Ari explained to each participant that they would be watching five minutes of a lecture from CS 147 with Professor Landay. Lecture video starts at 22:50 and ends at 27:55. The participants were told to pay attention to the lecture and use the app when they had questions and to show that they understood the material when the lecture was finished. Sherman setup the iPad with our wireframes and was there if there were any technical difficulties. David watched diligently and took notes of how the participant interacted with the app during and after the lecture.

Karthik was asked to simulate a classroom learning experience while using our application and presenting his lecture slides from the same computer. He was encouraged to imagine presenting the slides in tandem with the analytics platform of the classroom to enhance the classroom experience for students live in lecture. Team members observed and played the role of students in the class while Karthik interacted with the application.

## 5. Test Measures

We are looking for whether or not students have an interest in using the app the way we have designed it. We want to see if they take the initiative to show their level of understanding and let the professor know how well they are following the material. In addition, we want to see if the app is intuitive. Some of its features are based off of YikYak and we want to make sure that someone who has not used YikYak has an understanding of how to ask questions. We wanted to make sure students knew where to ask questions and find responses to questions.

Our metrics on the instructor side of the application is to get a sense of what instructors find useful from the analytics that our application connects. We are interested in what they find confusing and what needs they feel like this accomplish do and do not meet. Beyond just gauging how intuitive the application was, we wanted to know if instructors would truly use the application to respond and gauge the level of student understanding.

## V. Results

**1. Participant 1** - P1 spent most of the time watching the lecture video. She mainly focussed on using the application at the end of the video and afterwards. She did not understand the purpose of the "Got it!" button and was worried about professors having to interrupt lecture to answer questions.

**2. Participant 2** - P2 was very eager to use the application. He did not pay as much attention to the lecture and focused on finding out all the ways the application worked. He had not used YikYak before so he did not understand the role of the upvote and downvote function on questions. He was interested in knowing the level of understanding for other students in the class. He also felt that students should be prompted by the professor, on a per topic basis, to show their understanding. Finally, P2 was interested in having a summary report after class of understanding levels and important questions.

**3. Participant 3** - P3 split her time most evenly between the application and the lecture video, about 30/70. She mostly understood the interface and felt that it was intuitive, but did not understand the icons in the upper corners or the role of the "Got it!" button. She also felt that the application is great for professors who pause, but not for those who memorize their lectures with a rehearsed script.

**4. Participant 4** - P4 spent most of the time explaining the slide he was currently on and only interacted with the application when it came time to move to the next topic. He was confused what the bar on the interface - mistaking it for a progress bar for the lecture rather than the level of student understanding. He found the ranking of questions to be the most useful and suggested that we fade out other features of our application to focus on this main part of student interaction. He made the insightful

suggestion to continue to build this “live” classroom environment by allowing a TA of the class interact directly with the students during lecture and facilitating the

## **VI. Discussion**

The most important takeaway is making the “Got it!” button more clear. We need to decide whether and how students are prompted so they can show their understanding. From there, we can determine how this information is given to both the professor and the students. We feel like it is an important feature to add. Students ought to be able to say they understand so that the professor can move on, especially students who may not have a specific question.

In addition, we need to improve the design of some of the icons, particularly the ones in the top corners of the screen. Currently we have two “add question” buttons which may be confusing and unnecessary. We need to figure out whether there is a piece of functionality we are missing. For example, two of our subjects felt as though they would like to revisit the questions later, but our other subject felt strongly that it would not be useful. This is something to explore further.

## **VII. Appendices**

### **Script**

Akaash: Hello! Please read and sign the consent form.

Akaash: We are building a mobile application for students and instructors to use during their lectures in order to close the student-feedback loop.

Ari: You will be watching five minutes of a lecture from CS 147 with Professor Landay. You should pay attention to the lecture and use the app when you have questions or to show that you understand the material when the lecture was finished.

--after 5 minutes of interaction with the application --

Ari: What sort of feedback do you have on the application? Can you tell us what you

### **Raw Data**

#### **Participant 1**

##### **Observations**

- Splitting time between the video and our application roughly 85/15 at first, but exclusively at the video thereafter.
- She submitted a question. “Literally clicked on two things.”

##### **User impressions**

- “Obviously still in the process of building it”
- Wanted to see questions fold out into responses on click.
- Improve plus icon.
- Doesn’t understand purpose of “Got It!” button
- I never realized how slow CS 147 Lecture crawls.
- Issues raised when professors must interrupt scheduled lecture to address questions.

- How would a professor best interact with this application.

## **Participant 2**

### **Observations**

- Splitting time between video and our application roughly 5/95

### **User impressions**

- Add a question button indicated that these were questions posted by other students
- Has not used Yik Yak, did not understand upvote or downvote buttons
- Does not know what “Big Check Mark” means
- Couldn’t focus on the lecture
- Colored bar with the “Got It” to indicate level of understanding of the other students
- Proponent for Binary slider
- “Got It” should be associated with each question, rather than sequestered at the bottom
- Should be prompted by professor
- Per topic basis
- Don’t want questions lingering, but would like a summary report

## **Participant 3**

### **Observations**

- Splitting time between video and our application roughly 30/70 at first then entirely application

### **User impressions**

- Understand basic model: upvote, downvote
- No clue what two symbols in the upper corners or what “Got It!” is supposed to do
- Not many people think long-term enough
- Distracting yourself in the present for uncertain future payoff
- Great for professors who pause, but not for others like Mehran with a rehearsed script
- Does not expect responses to be high quality.

## **Participant 4**

### **Observations**

- Gave a mock lesson using the application while “teaching” one of his slides: advanced to the next topic when finished with the slides relevant to that topic

### **User impressions**

- Thought that the bar listed on the screen was a “progress” bar rather than a percentage for understanding
- Appreciated the ability to see and view questions in real time
- Concerned with the quality of questions - how similar questions could be consolidated together
- Had the interesting idea of the TA’s responding to these question live in lecture (“replying” to these questions in class)

- Was concerned about the general sentiment that most “questions” in class are probably requests to go over the material again - how would we factor in that sentiment into our application?
- Suggests removing the bar since he, as an instructor, is much more concerned about the questions that come up
- Suggests removing the modal that comes up over the overall list of questions - let the questions be the main interface for the application

**All forms handed out to participants**

IRB Use Only  
Approval Date: N/A

<b>STANFORD UNIVERSITY Research Consent Form</b>
Protocol Director: <i>Ari Echt-Wilson, David Eng, Sherman Leung, &amp; Akaash Nanda</i>
Protocol Title: <i>User Testing of Clarity: Closing the Classroom Feedback Loop (Alpha 1)</i>

**DESCRIPTION:** You are invited to participate in a **user test study** on our application concept, Clarity, designed to rethink how students and professors interact in the classroom for the purpose of providing us with candid feedback on how the UI flows. You will be asked to perform certain tasks involving interacting with Clarity and answer questions about your experience.

**TIME INVOLVEMENT:** Your participation will take approximately 20 minutes.

**RISKS AND BENEFITS:** The risks associated with this study are minimal and limited to a potentially unpleasant user-experience to toy around with. The benefit that may reasonably be expected to result from this study is to get an early experience with an unreleased application. **We cannot and do not guarantee or promise that you will receive any benefits from this study.** Your decision whether or not to participate in this study will not affect your social standings, grades in school, etc. in any way.

**PAYMENTS:** You will receive non-monetary compensation in the form of candies & chocolate as payment for your participation.

**PARTICIPANT'S RIGHTS:** If you have read this form and have decided to participate in this project, please understand your **participation is voluntary** and you have the **right to withdraw your consent or discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. The alternative is not to participate.** You have the right to refuse to answer particular questions. The results of this research study may be presented at scientific or professional meetings or published in scientific journals.

**CONTACT INFORMATION:**

**Questions:** If you have any questions, concerns or complaints about this research, its procedures, risks and benefits, contact the Protocol Director, Akaash Nanda, at akaashn@stanford.edu

**Independent Contact:** If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about the research or your rights as a participant, please contact the Stanford Institutional Review Board (IRB) to speak to someone independent of the research team at (650)-723-2480 or toll free at 1-866-680-2906. You can also write to the Stanford IRB, Stanford University, 3000 El Camino Real, Five Palo Alto Square, 4th Floor, Palo Alto, CA 94306.

Indicate **Yes** or **No**:  
I give consent to be audiotaped during this study.  
 Yes  No  
  
I give consent to be videotaped during this study:  
 Yes  No



*IRB Use Only*  
Approval Date: N/A

**STANFORD UNIVERSITY Research Consent Form**

Protocol Director: *Ari Echt-Wilson, David Eng, Sherman Leung, & Akaash Nanda*

Protocol Title: *User Testing of Clarity: Closing the Classroom Feedback Loop (Alpha 1)*

I give consent for tapes resulting from this study to be used for review by the Clarity team for the purpose of improving the product & UX:  
 Yes  No

I give consent for my identity to be revealed in written materials resulting from this study:  
 Yes  No

**The extra copy of this signed and dated consent form is for you to keep.**

**SIGNATURE** \_\_\_\_\_ **DATE** \_\_\_\_\_